

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	245	((wear near2 level\$4) or wearleveling) with (flag or bit or indicat\$3 or lebel)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:38
L2	10	1 with alternat\$	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 15:49
L3	79	((wear near2 level\$4) or wearleveling) with alternat\$	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:38
L4	30	("4803707", "4807188", "5367484", "5710734", "5793684", "5963970", "6000006", "6081447", "6157570", "6160738", "6230233", "6400634", "6493269", "6539453", "20020184432").pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:26
L5	3	1 and 4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:26
L6	1583	711/103.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:38
L7	2862	((wear near2 level\$4) or wearleveling)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:39
L8	115	6 and 7	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:41
L9	18	6 and 1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:41

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L12	18787	chan.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:45
L13	11	chan-johnny.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:46
L14	1	(non-volatile adj memory adj cell) with (flag adj cell).clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:47
L15	4201	(711/154.ccls. or 711/156.ccls. or 365/185.33.ccls.)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:56
L16	8	1 and 15	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/02 16:56


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wear leveling and nonvolatile memory and flag cells

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1 [Algorithms and data structures for flash memories](#)



Eran Gal, Sivan Toledo

June 2005 **ACM Computing Surveys (CSUR)**, Volume 37 Issue 2

Publisher: ACM Press

Full text available: [pdf\(343.39 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Flash memory is a type of electrically-erasable programmable read-only memory (EEPROM). Because flash memories are nonvolatile and relatively dense, they are now used to store files and other persistent objects in handheld computers, mobile phones, digital cameras, portable music players, and many other computer systems in which magnetic disks are inappropriate. Flash, like earlier EEPROM devices, suffers from two limitations. First, bits can only be cleared by erasing a large block of memory. S ...

Keywords: EEPROM memory, Flash memory, wear leveling

2 [Energy-aware design of embedded memories: A survey of technologies, architectures, and optimization techniques](#)



Luca Benini, Alberto Macii, Massimo Poncino

February 2003 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: [pdf\(288.44 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Embedded systems are often designed under stringent energy consumption budgets, to limit heat generation and battery size. Since memory systems consume a significant amount of energy to store and to forward data, it is then imperative to balance power consumption and performance in memory system design. Contemporary system design focuses on the trade-off between performance and energy consumption in processing and storage units, as well as in their interconnections. Although memory design is as ...

Keywords: Embedded systems, embedded memories, integration, memories, nonvolatile, system-on-a-chip, volatile

3 [Efficient management for large-scale flash-memory storage systems with resource conservation](#)





Li-Pin Chang, Tei-Wei Kuo

November 2005 **ACM Transactions on Storage (TOS)**, Volume 1 Issue 4**Publisher:** ACM PressFull text available: [pdf\(1.45 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Many existing approaches on flash-memory management are based on RAM-resident tables in which one single granularity size is used for both address translation and space management. As high-capacity flash memory is becoming more affordable than ever, the dilemma of how to manage the RAM space or how to improve the access performance is emerging for many vendors. In this article, we propose a tree-based management scheme which adopts multiple granularities in flash-memory management. Our objective ...

Keywords: Flash memory, consumer electronics, embedded systems, memory management, portable devices, storage systems

4 Extended ephemeral logging: log storage management for applications with long lived transactions



John S. Keen, William J. Dally

March 1997 **ACM Transactions on Database Systems (TODS)**, Volume 22 Issue 1**Publisher:** ACM PressFull text available: [pdf\(566.34 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#), [review](#)

Keywords: OLTP, disk management, logging, long transactions

5 Display: Improving revisitation in fisheye views with visit wear



Amy Skopik, Carl Gutwin

April 2005 **Proceedings of the SIGCHI conference on Human factors in computing systems****Publisher:** ACM PressFull text available: [pdf\(523.18 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The distortion caused by an interactive fisheye lens can make it difficult for people to remember items and locations in the data space. In this paper we introduce the idea of visit wear - a visual representation of the places that the user has previously visited - as a way to improve navigation in spaces affected by distortion. We outline the design dimensions of visit wear, and report on two studies. The first shows that increasing the distortion of a fisheye view does significantly reduce peo ...

Keywords: edit wear, fisheye usability, fisheye views, focus+context techniques, memorability, spatial memory, visit wear

6 Nomadic radio: speech and audio interaction for contextual messaging in nomadic environments



Nitin Sawhney, Chris Schmandt

September 2000 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 7 Issue 3**Publisher:** ACM PressFull text available: [pdf\(648.76 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Mobile workers need seamless access to communication and information services while on

the move. However, current solutions overwhelm users with intrusive interfaces and ambiguous notifications. This article discusses the interaction techniques developed for Nomadic Radio, a wearable computing platform for managing voice and text-based messages in a nomadic environment. Nomadic Radio employs an auditory user interface, which synchronizes speech recognition, speech synthesis, nonspeech audio ...

Keywords: adaptive interfaces, contextual interfaces, interruptions, nonspeech audio, notifications, passive awareness, spatial listening, speech interaction, wearable computing

7 Nomadic radio: scaleable and contextual notification for wearable audio messaging



Nitin Sawhney, Chris Schmandt

May 1999 **Proceedings of the SIGCHI conference on Human factors in computing systems: the CHI is the limit**

Publisher: ACM Press

Full text available: [pdf\(1.62 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Mobile workers need seamless access to communication and information services on portable devices. However current solutions overwhelm users with intrusive and ambiguous notifications. In this paper, we describe scaleable auditory techniques and a contextual notification model for providing timely information, while minimizing interruptions. Users actions influence local adaptation in the model. These techniques are demonstrated in Nomadic Radio, an audio-only wearable computing platf ...

Keywords: adaptive interfaces, auditory I/O, interruptions, notifications, passive awareness, wearable computing

8 Features: The Inevitability of Reconfigurable Systems



Nick Tredennick, Brion Shimamoto

October 2003 **Queue**, Volume 1 Issue 7

Publisher: ACM Press

Full text available: [pdf\(1.64 MB\)](#) [html\(40.12 KB\)](#) Additional Information: [full citation](#), [index terms](#)

9 eNVy: a non-volatile, main memory storage system



Michael Wu, Willy Zwaenepoel

November 1994 **ACM SIGPLAN Notices , ACM SIGOPS Operating Systems Review , Proceedings of the sixth international conference on Architectural support for programming languages and operating systems ASPLOS-VI**, Volume 29 , 28 Issue 11 , 5

Publisher: ACM Press


Full text available: [pdf\(1.32 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes the architecture of eNVy, a large non-volatile main memory storage system built primarily with Flash memory. eNVy presents its storage space as a linear, memory mapped array rather than as an emulated disk in order to provide an efficient and easy to use software interface. Flash memories provide persistent storage with solid-state memory access times at a lower cost than other solid-state technologies. However, they have a number of drawbacks. Flash chips are ...


10

Seeing, hearing, and touching: putting it all together




-  Brian Fisher, Sidney Fels, Karon MacLean, Tamara Munzner, Ronald Rensink
August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(20.64 MB\)](#) Additional Information: [full citation](#)

11 High dynamic range imaging

-  Paul Debevec, Erik Reinhard, Greg Ward, Sumanta Pattanaik
August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available:  [pdf\(20.22 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Current display devices can display only a limited range of contrast and colors, which is one of the main reasons that most image acquisition, processing, and display techniques use no more than eight bits per color channel. This course outlines recent advances in high-dynamic-range imaging, from capture to display, that remove this restriction, thereby enabling images to represent the color gamut and dynamic range of the original scene rather than the limited subspace imposed by current monitor ...

12 Location-awareness and interworking: Proximity services supporting network virtual memory in mobile devices

-  Emanuele Lattanzi, Andrea Acquaviva, Alessandro Bogliolo
October 2004 **Proceedings of the 2nd ACM international workshop on Wireless mobile applications and services on WLAN hotspots**


Publisher: ACM Press

Full text available:  [pdf\(192.89 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Wireless networked embedded terminals like personal digital assistants, cell-phones or sensor nodes are typically memory constrained devices. This limitation prevents the development of applications that require a large amount of run-time memory space. In a wired cum wireless scenario, a potentially unlimited amount of virtual memory can be found on remote servers installed on the wired network. However, virtual memory access requires performance constrained and lossless data flows against te ...

Keywords: mobility management, network swapping, proximity service, wireless networks

13 System architecture directions for networked sensors


-  Jason Hill, Robert Szewczyk, Alec Woo, Seth Hollar, David Culler, Kristofer Pister
November 2000 **ACM SIGOPS Operating Systems Review , ACM SIGARCH Computer Architecture News , Proceedings of the ninth international conference on Architectural support for programming languages and operating systems ASPLOS-IX, Volume 34 , 28 Issue 5 , 5**

Publisher: ACM Press

Full text available:  [pdf\(299.01 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Technological progress in integrated, low-power, CMOS communication devices and sensors makes a rich design space of networked sensors viable. They can be deeply embedded in the physical world and spread throughout our environment like smart dust. The missing elements are an overall system architecture and a methodology for systematic advance. To this end, we identify key requirements, develop a small device that is representative of the class, design a tiny event-driven operating system, and sh ...

14 System architecture directions for networked sensors

 Jason Hill, Robert Szweczyk, Alec Woo, Seth Hollar, David Culler, Kristofer Pister
November 2000 **ACM SIGPLAN Notices**, Volume 35 Issue 11

Publisher: ACM Press

Full text available:  pdf(1.32 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Technological progress in integrated, low-power, CMOS communication devices and sensors makes a rich design space of networked sensors viable. They can be deeply embedded in the physical world and spread throughout our environment like smart dust. The missing elements are an overall system architecture and a methodology for systematic advance. To this end, we identify key requirements, develop a small device that is representative of the class, design a tiny event-driven operating system, and sh ...

15 An optical system for full text search

 P. A. Mitkas, P. S. Guilfoyle
May 1989 **ACM SIGIR Forum , Proceedings of the 12th annual international ACM SIGIR conference on Research and development in information retrieval SIGIR '89**, Volume 23 Issue SI


Publisher: ACM Press

Full text available:  pdf(1.20 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper we propose a full text search system based on optics. The storage and processing of the textual data are performed by an optical back-end system to an electronic computer. In this way we can take advantage of the speed and parallelism of digital optical processing. Using the proposed configuration we show how one might implement a set of text processing operations using lasers, spatial light modulators and photodetectors.

16 Sculpting: an interactive volumetric modeling technique

 Tinsley A. Galyean, John F. Hughes
July 1991 **ACM SIGGRAPH Computer Graphics , Proceedings of the 18th annual conference on Computer graphics and interactive techniques SIGGRAPH '91**, Volume 25 Issue 4

Publisher: ACM Press

Full text available:  pdf(8.21 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present a new interactive modeling technique based on the notion of sculpting a solid material. A sculpting tool is controlled by a 3D input device and the material is represented by voxel data; the tool acts by modifying the values in the voxel array, much as a "paint" program's "paintbrush" modifies bitmap values. The voxel data is converted to a polygonal surface using a "marching-cubes" algorithm; since the modifications to the voxel data are local, we accelerate this computation by an in ...

Keywords: 3D interaction, antialiasing, free-form modeling, sculpting, volumetric data

17 A Diagnostic Emulator for HEAO software development

 Peter H. Beer, Kenneth J. Hupf
July 1976 **ACM SIGSIM Simulation Digest , Proceedings of the 4th symposium on Simulation of computer systems ANSS '76**, Volume 7 Issue 4

Publisher: IEEE Press, ACM Press

Full text available:  pdf(701.56 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Diagnostic Emulation is the application of microprogramming to the emulation of an operational computer to support software development and verification for that computer. A conventional technique, Interpretive Computer Simulation (ICS), has been used for many years in support of such software development and verification efforts. The ICS method is becoming less cost effective. For the development of attitude control software for NASA's High Energy Astronomical Observatory (HEAO) diagnostic ...

18 Technical session 7: multimedia systems: Coordinated multi-streaming for 3D tele-immersion



David E. Ott, Ketan Mayer-Patel

October 2004 **Proceedings of the 12th annual ACM international conference on Multimedia**

Publisher: ACM Press

Full text available: pdf(608.83 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper looks at the problem of multi-streaming in 3D tele-immersion and describes how a protocol architecture called CP (for Coordination Protocol) can be used to coordinate video frame transport between application clusters. CP provides application endpoints with information about current network conditions, and an open architecture for implementing application-specific coordination schemes. The scheme described in this paper apportions available bandwidth among flows such that frame tra ...

Keywords: distributed applications, flow coordination, network protocols

19 A simulation approach to the reliability analysis of main storage systems



S. K. Kwon, H. E. Harvey

March 1979 **Proceedings of the 12th annual symposium on Simulation**

Publisher: IEEE Press

Full text available: pdf(846.51 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The Monte Carlo technique has been employed in studying the behavior of main storage systems with single error correction in terms of uncorrectable error rate and storage card replacement rate under various maintenance conditions in the field. It has been demonstrated that such a simulation approach is very powerful and practical when the component hazard rates vary with time, and that the results of this analysis can be used in determining an optimum maintenance strategy that minimizes the ...

20 Designing computer systems with MEMS-based storage



Steven W. Schlosser, John Linwood Griffin, David F. Nagle, Gregory R. Ganger

November 2000 **ACM SIGOPS Operating Systems Review , ACM SIGARCH Computer Architecture News , Proceedings of the ninth international conference on Architectural support for programming languages and operating systems ASPLOS-IX, Volume 34 , 28 Issue 5 , 5**

Publisher: ACM Press

Full text available: pdf(439.06 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

For decades the RAM-to-disk memory hierarchy gap has plagued computer architects. An exciting new storage technology based on microelectromechanical systems (MEMS) is poised to fill a large portion of this performance gap, significantly reduce system power consumption, and enable many new applications. This paper explores the system-level implications of integrating MEMS-based storage into the memory hierarchy. Results show that standalone MEMS-based storage reduces I/O stall times by 4-74X over ...

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